Young's moduli than would be expected from this type of bonding. It is probably for this reason that the elastic constants of γ_1 are quite close to those of the intermetallic compound γ.

γ_2-$HgSn_{7-8}$

γ_2 has the form of a solid solution of mercury in tin; however, the structure is simple hexagonal rather than the tetragonal cell found in pure tin. This structure is formed by weak interatomic, metallic linkages. Since metallic bonds are non-directional, slip processes occur easily in the directions of closest atomic packing; planes of high atomic density slide past each other under the application of small shearing forces. The interatomic metallic linkages reform as easily as they are broken. Hence, γ_2 has considerably lower bulk, shear and Young's moduli than the other two alloys.

POSSIBLE PHASE TRANSITIONS

Many materials are able to transform from one crystalline form to another when hydrostatic pressures are applied. These transformations, when they occur, always occur with the structure changing to one of higher density with increase in pressure.

γ-Ag_3Sn

The slope changes in the elastic constants and the ultrasonic velocities of Ag_3Sn may imply that some type of a pressure dependent volume change may be occurring in the range of 20-30 kb. Since the gasket and frictional effects take up most of the applied force, a considerable increase in force is required to compress the gaskets when the sample undergoes a discontinuous volume change. This effect spreads the volume transition over a range of applied force or apparent pressure. For this reason it is not possible to deter-